

PROJECT DATA																			
Gazogen, Inc. - 02GO12055																			
Testing a New Type of Fixed Bed Biomass Gasifier in a Modular 100 kW Electric Power Generating Plant																			
Recipient:	Gazogen, Inc.	Instrument Number:	DE-FG36-02GO12055																
Recipient Project Director:	Carl Bielenberg 802.456.8993 1915 E. Hill Rd Marshfield, VT 05658	CPS Number:	1827																
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Subcontractor(s):		B&R Number(s):	ED190602																
		PES Number(s):	02-2140																
EERE Program:	Biomass	State Congressional District	VT - 1																
<p>PROJECT SCOPE: The objective of this program is to develop and test an automated containerized 100 kW electric co-generation plant utilizing a system for woodchip fuel. Testing will develop performance data, as well as fuel dryer and automated controls to utilize commercially available high moisture content hardwood chips. A fuel to electricity conversion efficiency of 25% is expected; 30% for larger ones, and a fuel to thermal efficiency of 30% for all plants. Total efficiency would therefore be 55% and 60%, assuming full utilization of co-generated heat; more than twice the efficiency of small central power stations.</p>																			
<p>FINANCIAL ASSISTANCE</p> <table border="0"> <tr> <td>Approved DOE Budget</td> <td>\$174,580</td> <td>Approved DOE Share</td> <td>\$174,580</td> </tr> <tr> <td>Obligated DOE Funds</td> <td>\$174,580</td> <td>Cost Share</td> <td>\$113,045</td> </tr> <tr> <td>Remaining Obligation</td> <td>\$0</td> <td></td> <td></td> </tr> <tr> <td>Unpaid Balance</td> <td>\$121,580</td> <td>TOTAL PROJECT</td> <td>\$287,625</td> </tr> </table>				Approved DOE Budget	\$174,580	Approved DOE Share	\$174,580	Obligated DOE Funds	\$174,580	Cost Share	\$113,045	Remaining Obligation	\$0			Unpaid Balance	\$121,580	TOTAL PROJECT	\$287,625
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Project Period: 7/1/02-6/30/04																			

TECHNICAL PERFORMANCE

DE-FG36-02GO12055

Gazogen

Testing a New Type of Fixed Bed Biomass Gasifier in a Modular 100 kW Electric Power Generating Plant

PROJECT SYNOPSIS

Gazogen has developed a new type of fixed bed biomass gasifier called a "Rotary Hearth Mixed Flow Gasifier" (RHMF) designed to produce low tar, low ash content gas. The project will develop and test an automated containerized 100 kW electric co-generation plant utilizing the new system, specifically designed for woodchip fuel. The Gasifier embodies features that prevent fuel bridging, char bed aggregation and channeling, which results in increased power and improved gas quality. Further testing will develop performance data, as well as fuel dryer and automated controls to utilize commercially available high moisture content hardwood chips. A fuel to electricity conversion efficiency is expected of 25% for smaller plants and 30% for larger ones, and a fuel to thermal efficiency of 30% for the smaller and larger plants. The total efficiency would therefore be 55% and 60%, assuming full utilization of co-generated heat, or more than twice the efficiency of small central power stations.

SUMMARY OF TECHNICAL PROGRESS

Progress continues in completing the 100kW integrated power plant. Most of the interface equipment between the RHMF gasifier and the engine generator set, namely the cyclone, gas suction fan, gas cooler, gas piping and control valve, flare gas heat recovery boiler, and ash augers and ash receivers have been installed. Significant unfinished components are the control panel, the power and control wiring, and the transducer installment.

Overall progress has been slowed by the prolonged efforts to reduce particulate emissions at the Messersmith Boiler Plant in Gardner, MA. The subcontractor on the control panel has not yet completed the panel, which has prevented installing the wiring and conduit in the plant. Also, some time has been spent building slightly differing gas collectors in preparation for gasifier testing.

SUMMARY OF PLANNED WORK

Two tasks dominate activities over the next six months: 1) completion of the construction of the 100 kW power plant, and 2) the initiation of boiler firing tests of the RHMF gasifier. The power plant will require new subcontractors to complete the wiring and control panel construction as well fabricate metal for the gasifier.

PROJECT ANALYSIS

The project is behind schedule and will require a no-cost time extension through 12/31/05 to finish construction of the power plant and gasifier as well as test the unit over a multi-month period. The success of the project hinges on emission control as well as the integration of the power plant to the gasifier – both of these attributes will be tested during the next year.

ACTION REQUIRED BY DOE HEADQUARTERS -

No action is required from DOE headquarters at this time.

STATEMENT OF WORK

DE-FG36-02GO12055

Gazogen

Testing a New Type of Fixed Bed Biomass Gasifier in a Modular 100 kW Electric Power Generating Plant

Detailed Task Description

Task 1. Combined testing and optimization of the RHMF Gasifier

Task 2. Building of and programming of automated control panel and data acquisition system for the first RHMF gasifier

Task 3. Construction of second RHMF gasifier

Task 4. Installation of second gasifier, fuel dryer, gas cleaner and 100 kW genset in 20' sea freight container

Task 5. Shop testing of 100 kW integrated power plant

Task 6. Field installation of 100 kW plant

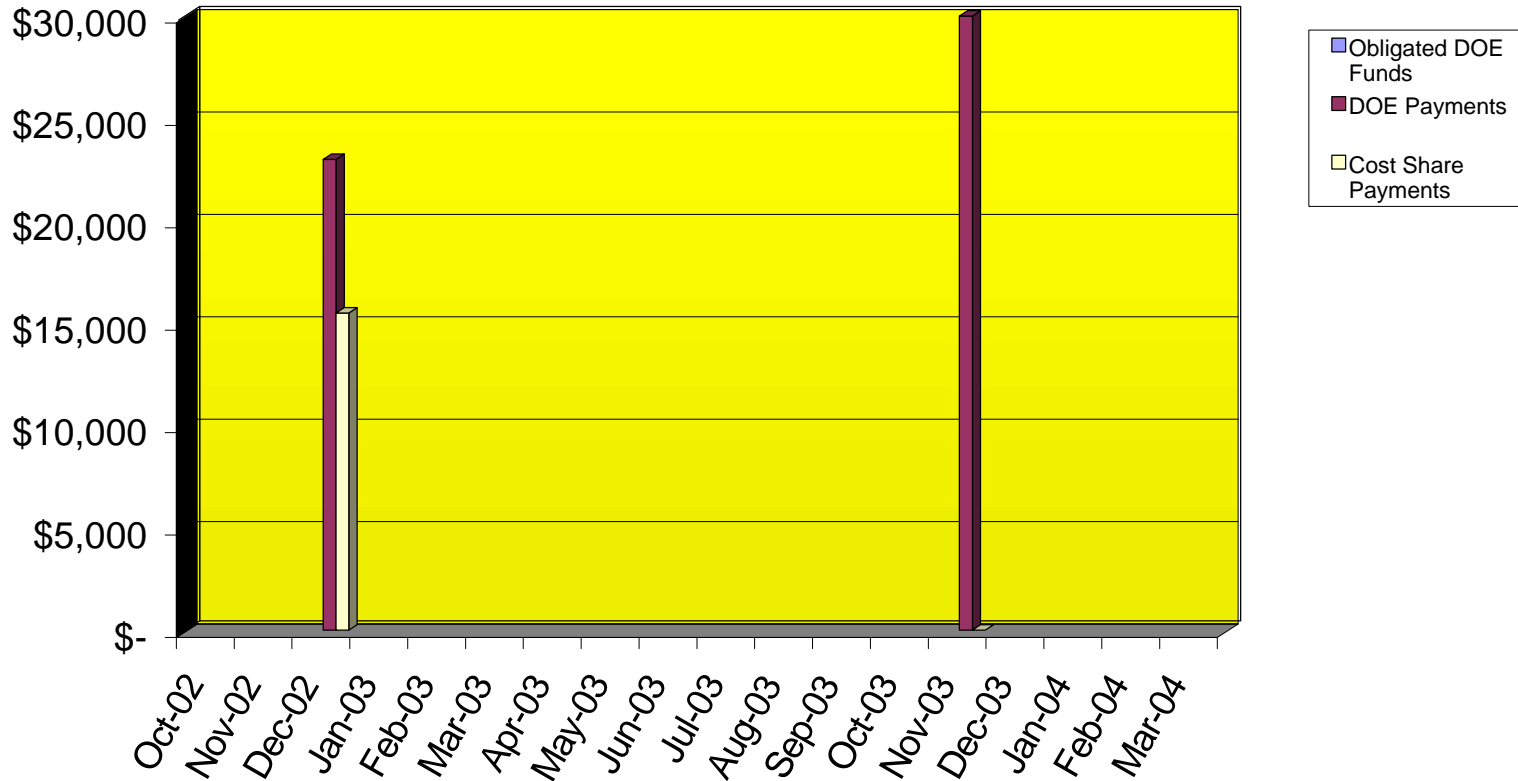
Task 7. Field testing of integrated plant

Project Cost Performance in DOE Dollars for Fiscal Year 2003

DE-FG36-02GO12055

Gazogen, Inc.

Testing a New Type of Fixed Bed Biomass Gasifier



	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03
Obligated DOE Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DOE Payment	\$0	\$0	\$23,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Cost Share Payment	\$0	\$0	\$15,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	PFY*	Cumulative
Obligated DOE Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$174,580	\$174,580
DOE Payment	\$0	\$30,000	\$0	\$0	\$0	\$0	\$0	\$53,000
Cost Share Payment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$15,500

Approved DOE Budget:	\$174,580
Approved Cost Share Budget:	\$113,045
Total Project Budget:	\$287,625

* Prior Fiscal Years

Gazogen - GO12055																					
ID	Task Name	Start	Finish	2002			2003				2004				2005				Qtr 1		
				Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4			
1	Build integrated RHMF gasifier generating plant	Mon 7/1/02	Thu 9/30/04		<div></div>								<div></div> 85%								
2	Build shop test bed for RHMF gasifier generating plant	Mon 7/1/02	Mon 6/30/03		<div></div> 100%																
3	Shop test bed for RHMF gasifier generating plant	Wed 6/30/04	Thu 9/30/04										<div></div> 0%								
4	Field-test integrated RHMF gasifier generating plant	Mon 5/30/05	Fri 9/30/05														<div></div> 0%				
5	Reporting	Mon 7/1/02	Fri 12/30/05		<div></div>												<div></div> 65%				

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